Human Factors

research and technology division

Human Factors Design Methodology

Objective

To develop principled and robust user interfaces with appropriate allocation of function between the display/automation system and the user.

Approach

A human-centered design methodology was developed during the Taxiway Navigation and Situation Awareness (T-NASA) System project. A Task Analysis based on field observation was conducted to develop a thorough understanding of problems and issues associated with current operations from a user's perspective. Formal Technology Assumptions consisting of technology requirements and availability were made based on assumptions of implementation time frame. Both the task analysis and technology requirements were analyzed to develop the User Information Requirements defining the precise nature of information required by the users under the proposed operating conditions. Combining these analyses and current human factors domain knowledge, System Requirements were determined, consisting of a set of desired system characteristics and a design philosophy. Finally, those system requirements determine the specific display components which make up the System Definition. Through Iterative Evaluation and Validation, performance metrics are

Impact

The human-centered design methodology was successfully used during the development of the T-NASA System for the Terminal Area Productivity program. Its success is demonstrated by the incorporation of the T-NASA display formats into Rockwell Collins/Flight Dynamics' Surface Guidance System under development for certification in the 2003 time frame.

Information Technology

User-centered interface design; Human-automation functional allocation

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